

Date: Mon, 2 Aug 93 14:45:44 PDT
From: Info-Hams Mailing List and Newsgroup <info-hams@ucsd.edu>
Errors-To: Info-Hams-Errors@UCSD.Edu
Reply-To: Info-Hams@UCSD.Edu
Precedence: Bulk
Subject: Info-Hams Digest V93 #931
To: Info-Hams

Info-Hams Digest Mon, 2 Aug 93 Volume 93 : Issue 931

Today's Topics:

1.5 KW Generator for Sale
Bootlegger At ARRL N.E. Convention
Earphone Phasing - an experiment
Emergency Power Off (2 msgs)
Handhelds on airplanes
Propagation Forecast Bulletin 30 ARLP030

Send Replies or notes for publication to: <Info-Hams@UCSD.Edu>
Send subscription requests to: <Info-Hams-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Info-Hams Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/info-hams".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 2 Aug 93 11:19:00 GMT
From: sdd.hp.com!col.hp.com!csn!csn!sosinc!robert.garcia@network.ucsd.edu
Subject: 1.5 KW Generator for Sale
To: info-hams@ucsd.edu

1.5 KW Gasoline Powered 16 to 36 volt DC Generator for sale

I have several military surplus cage mounted DC generators that have
been refurbished and are offered for sale. The units have a manually
variable voltage output of about 16 to 36 volts at up to 57 Amps
continuous (approximately 100 Amps intermediate) operation. These
generators were originally designed to power military radio transmitters
under extreme conditions or "jump start" large diesel engines in trucks
and tanks.

The generators are powered by a heavy duty two (2) cylinder air
cooled industrial (Wisconsin) engine of 16 cubic inches and produce about
10 horsepower using ANY type of gasoline. The engines have a protected

ignition system designed to start and run under the worst weather conditions. The engines are quite capable of powering a standard 5 KW 120/240 volt 60 Hz generator instead of the 28 volt DC generator. The military engines are easy to maintain and operate and come equipped with a mechanical fuel pump allowing gasoline to be drawn from the integral 1.5 gallon tank or an auxiliary fuel tank. Repair parts are available at any auto supply outlet or outboard motor supply business. These generators were designed to be "GI proof" and have been maintained and rebuilt to the same standards as when originally put into operation.

Possible uses are:

Running transmitters and repeater communication systems.
Charging 24 volt trolling motor batteries.
Charging 36 volt fork lift batteries.
Jump starting diesel engines at truck stops or fixed sites.
Powering 24 volt to 120 volt 60 Hz inverters as found in RV's.
The engines have been used on large "mudboats" in Louisiana marshes.

Original cost to the US Government: \$2610.00

Sale Price: \$300 each FOB Baton Rouge, LA.

Weight: 121 pounds each

Robert Garcia, Ph.D. PO Box 22106 Baton Rouge, LA 70894 (504) 767-4100

Internet Address: robert.garcia@sosinc.com

RIME Routing: ->505

ThrobNet Routing: ->505

ILink Routing: ->CAJUN

. SM 1.06 ----- . Dr Robert Garcia, PO Box 22106, Baton Rouge, LA 70894 USA

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+-----+
| Southern On-line Services - SysOp: Russell Jackson - 504-356-0790 |
| 2000+ Windows Files, 2.4 Gig, Internet, RIME and Throbnet On-line |
+-----+
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Date: Mon, 2 Aug 93 16:18:46 GMT
From: butch!rapnet!news@uunet.uu.net
Subject: Bootlegger At ARRL N.E. Convention
To: info-hams@ucsd.edu

I attended the ARRL New England Convention/Hamfest in Manchester, NH on July 24, 1993. As I stood in line to be checked in to the license exam sessions, I noticed that the rather-large lady ahead of me in line had a DJ-F1T on her belt, with a speaker-mic clipped to the collar of her blouse. I thought it unlikely that she would be allowed to bring the HT into the exam session. When she got to the check-in table at the door, the people behind the table asked her if she had any license/CSCE photocopies that she needed to attach to her 610. She replied that she didn't have a license yet, nor did she have any CSCEs. The man behind the table told her that she shouldn't even have the HT. Her response was to reach down and turn it off. In she went. I checked in, and headed down to the CW area to take my one remaining test (Element 1C) while a friend checked in behind me and went to the written-exam area to take her General written exam. After I blew the 1C exam (again, sigh) I waited outside for my friend. She passed the General written test, got her CSCE, and met me and we went to lunch. As we ate, I noticed the same "I don't have a license" lady walking along, yakking away into her speaker-mic. I was quite surprised at her blatant bootlegging (If she didn't have a license before the test, she didn't have a callsign, no matter what happened at the test.) I pointed her out to my friend. My friend said that she had heard the VE telling the lady that she had blown whatever exam she had taken, and then the lady had gotten up and left (confirming what my friend had heard, since the lady didn't wait around for a CSCE.)

I felt that I should do something about this bootlegger, so I went back up to the examination room to speak to the head of the VE team. The gate guards had no idea what to do with me. I wasn't there to take an exam, so they weren't about to let me into the room to speak to anyone. I explained the bootlegger situation, and they suggested that I go speak to someone at the ARRL info booth. Off I went. When I got to the ARRL info booth, I asked the info-man if there were any FCC officials at the convention. He said that there were none that he knew of, unless they were "undercover" (his word.) I explained the Bootlegger Massacre (with 4-part harmony, etc.) yet again and asked him what he suggested. He suggested that there was nothing that could be done. I was surprised, to say the least.

I understand that Amateur Radio is supposed to be self-policing, and I was making an attempt to police our hobby. Should I have expected a little help or support from the organization that purports to be our representative body?

-wa1vht

--

Lockheed Sanders may disagree so these are solely the opinions of:
Scott L. Babb - babb@rapnet.sanders.lockheed.com

"We didn't inherit the Earth from our parents,
we are borrowing it from our children."

Date: Mon, 2 Aug 1993 19:44:44 GMT
From: nih-csl!helix.nih.gov!arm@uunet.uu.net
Subject: Earphone Phasing - an experiment
To: info-hams@ucsd.edu

In article <CB3rIz.5tJ@odin.corp.sgi.com> adams@chuck.dallas.sgi.com (Charles Adams) writes:

>Trevor, a G3 who says he is exiled in TX, asked me if i knew
>about an old trick of changing the phasing on a set of earphones.
>i didn't.

>
> [much omitted...]

>
>the human mind and the ears make up a beautiful comination. we tell
>the direction of sound by the relative strength between the right and
>left ear. with mono on earphones, the sound intensity is the same
>in each ear. evidently, with phasing, we have the ability to discern
>a change in phase also. see my previous post on the small earphone
>and the null effect, a.k.a the Adams Effect.

We localize the direction of sound based upon a number of factors. For high frequency sounds, amplitude is the dominant characteristic. It would be very difficult to use the phase information because the wavelength is so short. (I would be happy to explain this further.) For lower frequencies, phase is the dominant characteristic for localization. Note, in both cases I refer to localization in the horizontal plane: left-right, front-back. Detecting the elevation of a sound, especially along the midline of the body, is more difficult and depends upon the bandwidth of the sound and the complex folding of the ear lobe.

Picking a signal out of the noise (QRN and QRM) is a complex process called auditory scene analysis. It requires more than localization. It would be interesting to build a circuit that makes different cw signals (or voice signals) sound like they come from different locations in space. It would make picking out the signal a lot easier, I suspect. Just a thought, I have no (good) idea how to do it!

-- Andy Mitz
WA3LTJ
MSEE
PhD, neurophysiology (I might have guessed!)

--

Andrew Mitz, Biomedical Eng., Nationl Institutes | Opinions are mine alone
of Health Animal Center, Poolesville, MD | arm@helix.nih.gov

Date: 2 Aug 93 19:12:51 GMT
From: ogicse!hp-cv!sdd.hp.com!col.hp.com!news.dtc.hp.com!srngenprp!
alanb@network.ucsd.edu
Subject: Emergency Power Off
To: info-hams@ucsd.edu

Gary Coffman (gary@ke4zv.uucp) wrote:

: We call it a GFI, Ground Fault Interrupter.

: Our 110 volt residential wiring consists of three insulated wires, the
: hot (black), the neutral (white), and the safety ground (green). The
: safety ground **can** be bare under certain conditions, but the other
: two are insulated. The safety ground and the neutral lead must be
: connected together at the distribution panel, where they're both
: connected to Earth ground, but they aren't supposed to be connected
: together anywhere else

..

: A GFI is configured to measure current flow in this
: third wire. If it exceeds a minimum value, it trips the hot lead
: out of circuit.

I thought that the GFI measured the differential current in the hot and
neutral wires. If the GFI sensed ground-lead current, then if you touch a
"hot" wire while standing on earth ground (swimming pool, for example),
the GFI would not trip. (Since the return current would be through the
earth, not the safety ground.)

: Our 220 volt systems can be more complex. They can be either single
: phase, or one of two different varieties of three phase. In residential
: wiring single phase is normally used and all three wires usually carry
: current. Two of the wires are "hot" and one is neutral. From either hot
: wire to neutral, you get 110 volts. From one hot wire to the other, you
: get 220 volts. Note the absence of a separate safety lead.

This brings up an interesting question: My (old) electric stove has a
3-prong 220V plug on it. It also has a 3-wire 110V AC outlet for plugging
in your coffee pot or whatever. I assume the 110V outlet's neutral and
safety ground leads must just be wired together to 220V neutral. Isn't
this some kind of violation of the electrical code?

: Ideally, loads are balanced so no *net* current flows in the neutral lead,
: thus it can be considered "ground", but this rarely happens in practice.

I assume that's the way my stove works. There would be no reason to wire the burners to the third wire. For sure my linear amplifier doesn't put current into the third lead. What kind of 220V load would intentionally draw current from the neutral lead?

AL N1AL

Date: Sun, 01 Aug 93 17:12:04 CDT
From: newsflash.concordia.ca!mizar.cc.umanitoba.ca!bison!sys6626!inqmind!
bills@uunet.uu.net
Subject: Emergency Power Off
To: info-hams@ucsd.edu

brian@nothing.ucsd.edu (Brian Kantor) writes:

> jerry@key.amdahl.com (Jerry Pendleton) writes:
> >I am rewiring my shack and I would like to put some EPO ("big red button")
> >switch in strategic locations.
>
> This is often done with a 'shunt trip' circuit breaker. That is a
> breaker that has an auxiliary coil that when energized, causes the
> breaker to trip out just as though it had sensed overcurrent.
>
> You can activate the coil with just about any kind of switch contact:
> in one lab, there was an EPO switch by the door, and several more around
> the room, and the water and fire alarms were wired up too. That way, if
> a pipe broke, or the fire alarm was tripped, or if you needed to help
> someone who'd gotten across the mains, the power to everything except
> the lights and alarms could be killed easily.
>
> Dunno how easy it would be to find a shunt-trip breaker for the typical
> household breaker panel, but you could probably get a separate subpanel
> and put it in there. I suspect you'd have to go to a professional
> electrical supply house to get one, though - they're not carried at the
> Home Depot down the street from me.
> - Brian

Actually, one type of shunt-trip breaker is readily available at lumber yards and home improvement centres; try a GFI breaker. Your "emergency power off buttons" would be big red buttons that would put a 10K resistor from line to ground. Its a little "un-clean" but it would be very simple and cheap; don't use it for daily shutdowns, though, since consumer GFIs probably will only live for a couple of hundred

cycles in their lifetime.

The drawback may be that any REAL ham will want to run his kilowatt moonbounce rig on 230 VAC; I've never seen a 2-pole GFI at a lumber yard.

I had to supply "EPO" or "E-STOP" buttons for a computer room at work some years ago; we later installed a second button so that if the power tripped, a "start" button was required to restore power. This derived from an incident in which a faulty emergency power system caused a 600 volt breaker to cycle about 30 times; this was *extremely* hard on the drives in the PDP 11. I just used a regular AC contactor, though.

Bill
VE4STW

bills@inqmind.bison.mb.ca
The Inquiring Mind BBS, Winnipeg, Manitoba 204 488-1607

Date: 2 Aug 1993 14:06:55 -0400
From: europa.eng.gtefsd.com!eddie.mit.edu!news.intercon.com!panix!not-for-mail@uunet.uu.net
Subject: Handhelds on airplanes
To: info-hams@ucsd.edu

In <23jgtq\$eqo@news.bu.edu> david@bu.edu (David Gagnon) writes:

>In the hopefully not too distant future I will be receiving my amateur radio
>license, and I would like to be able to take my 2m handheld when I go on
>vacation or a business trip.

>If I am flying there, I would like to be able to put my radio in my carry
>on luggage, and I was wondering if there were any problems with doing this.
>I realize that they will probably shoot you if you start transmitting or
>such while on the plane, but I would like to know if airport security will
>let you on the plane with it in carry on luggage.

>Also, can you transmit from within an airline terminal, or is there a
>chance that you will be causing harmful interference to anyone? Also,
>will they let you do it? Any replies will be appreciated.

Congratulations on your imminent license!

There was a thread on this general subject (HTs and aviation)
about four months ago.

If you go to a country where radios are illegal, I suppose you will have to consider the radio might be confiscated at customs there. If you get a reciprocal ham permit first, the permit should be enough to overcome any suspicions at customs.

You would be smart to get a customs form before you go, showing that you had it before you began your trip. That way, you don't have to worry about US customs trying to hit you up for duties upon your return. That US customs form may be of some help in the customs of other countries, too.

I expect there are airports where the guards are very worried about terrorists, where the guards would get nervous when they see you pull out and talk into your HT. But in the US, at least, if you have the ham license and are otherwise transmitting legally, your mere status as standing on the ground at an airport should not keep you from transmitting.

As you know, transmitting while on board a commercial aircraft is a no-no. The pilot does not have the power to let you do it.

On a private plane, you would have to satisfy Part 97, with permission of pilot etc.

--

Carl Oppedahl AA2KW (patent lawyer)
1992 Commerce Street #309
Yorktown Heights, NY 10598-4412
voice 212-777-1330

Date: Sat, 31 Jul 93 22:17:06 GMT
From: swrinde!gatech!howland.reston.ans.net!math.ohio-state.edu!magnus.acs.ohio-state.edu!cis.ohio-state.edu!mstar!n8emr!bulletin@network.ucsd.edu
Subject: Propagation Forecast Bulletin 30 ARLP030
To: info-hams@ucsd.edu

=====
| Automatic relayed from packet radio via |
| N8EMR's Ham BBS, 614-895-2553 |
=====

ZCZC AP91
QST de W1AW
Propagation Forecast Bulletin 30 ARLP030

>From Tad Cook, KT7H, Seattle, WA
July 30, 1993
Relayed by KB8NW/OBS & BARF-80 BBS
To all radio amateurs

SB PROP ARL ARLP030
ARLP030 Propagation de KT7H

Solar flux peaked on July 23 at 110, and is now dropping again. Geomagnetic conditions have been very stable, but there is the possibility of an upset from a recurring coronal hole around the time this bulletin is released. The next disturbed period in the forecast is around August 7.

Activity will continue to drop and should bottom out around August 9 when the flux hits 80. There may be a new low in solar flux for this side of the cycle. After that the solar flux won't pass 100 again until around August 20.

Although low activity has not helped the higher frequencies, propagation on lower bands has been aided by the quiet geomagnetic conditions. The author enjoyed an evening of exceptional signals into Europe and Africa from Seattle on 20 meters on July 28. The path projection this week will be for this Sunday, from Seattle to Botswana, looking at the conditions that the author experienced over the same route a few days earlier.

The free solar cycle graph program from WA4TTK is now available. To run it you will need an MS DOS PC with VGA or EGA display. It is being posted to a number of bulletin boards around the country, with the file name of SOL24-1.ZIP. It should be on the ARRL BBS soon, and it is also available by mail from the author. Send a formatted 3.5 inch or 5.25 inch diskette, high or low density, to Scott Craig, 409 Jessie Drive, Nashville, TN 37211. Be sure to include a stamped addressed return mailer.

This program displays the last few years of this solar cycle, and allows the user to add data from this weekly bulletin, as well as display different moving averages. It is a very interesting and useful tool. Thanks to WA4TTK for making this free program available.

Sunspot Numbers from July 22 through 28 were 76, 97, 92, 80, 82, 98 and 72, with a mean of 85.3. 10.7 cm flux was 108, 110, 106, 102, 104, 103 and 102, with a mean of 105.

Th~re path this week from Seattle to Botswana on 80 meters should be open from 0300 to 0500z, peaking around 0430z. 40 meters will be

available from 0130 to 0530z, with the best time from 0400 to 0430z. 30 meters should be open around 0130 or 0200z and again from 0430 to 0600z. 20 meters should be best from 0530 to 0700z. 18 meters may have a weak opening on most days around 1730 to 1800z, and on some days from 0530 to 0600z. 10, 12 and 15 meters do not look good over this path.

NNNN

Date: Fri, 30 Jul 1993 22:33:18 GMT
From: news.cerf.net!crash!newshub.nosc.mil!dog.ee.lbl.gov!overload.lbl.gov!agate!spool.mu.edu!sgiblab!sgigate!odin!chuck.dallas.sgi.com!adams@network.ucsd.edu
To: info-hams@ucsd.edu

References <1910@arrl.org>, <23c04b\$hhn@ornews.intel.com>,
<1993Jul30.162038@IASTATE.EDU>d.
Subject : Re: Need explanation of procedure in CW contacts.

In article <1993Jul30.162038@IASTATE.EDU>, wjturner@IASTATE.EDU (William J Turner) writes:

|> In article <23c04b\$hhn@ornews.intel.com>, zardo@ornews.intel.com (Jim Garver)
|> writes:
|> >
|> > di-dah-di-di-di means "hang on a minute, I'm busy reading my screen"
|> >
|> >
|> That's good!!
|> >
|> Who out there in netland knows what to use AS for? I've had to use it and the
|> other ham had *no* idea what I was doing. (BTW--I use a straight key, and was
|> not reading any screen. :-)
|> >
|> Will
|> >
|> --
|> Will Turner, NORDV -----
|> wjturner@iastate.edu | "Are you going to have any professionalism, |
|> twp77@isuvax.iastate.edu | or am I going to have to beat it into you?" |
|> TURNERW@vaxld.ameslab.gov -----

AS - means wait, to please stand by. the station that gets tied up usually is the one to send this and ceases transmission for (hopefully) just a few seconds. sometimes, and i've done this, the other station may periodically send something to fill the 'dead space' so that someone else will know that the frequency is being used for a qso.

something that i've noticed a lot lately on 40 mtr CW and i assume that

it occurs on the other bands as well is:

station sends QRL? (meaning is the frequency in use?) and before anyone that could be using the frequency gets a chance to repond, the station immediately starts sending a CQ. good operating procedure would have the station listen for a few seconds. then send QRL? again. wait and then maybe start calling CQ. common sense and courtesy helps a great deal here.

another note. if someone is in qso on a frequency, another station comes up and sends QRL?. there are several scenarios here, but let's take the most elementary. the sending station cannot QSK, i.e. hear between the dits and dahs or between the characters or maybe is operating QSK, but doesn't hear the QRL? the listening station involved in the QSO may be writing, etc. it will take him or her a second or two to grab the key, paddles, or keyboard. so hold up grabbing the frequency for a second. ok, in order to minimize the interruption, the station listening will only send the letter C, which is an abbreviation for Si, which is Spanish for yes. it only takes a small part of a second to send C and go back to receiving. a good CW op may not miss any of the other stations' transmission. there is no need for a station to send anything else. you hear people get ticked off and send LID, QSY PSE, and even worse. just a simple C is all that is needed here.

off the soap box..... de k5fo dit dit

--

-----cut here-----

Chuck Adams, K5FO - CP60

adams@sgi.com

Date: 30 Jul 93 07:46:45 GMT

From: spool.mu.edu!bloom-beacon.mit.edu!eru.mt.luth.se!lunic!sunic!

trane.uninett.no!news.eunet.no!nuug!nac.no!nntp.nta.no!hal.nta.no!

klr@decwrl.dec.com

To: info-hams@ucsd.edu

References <1993Jul28.055245.4258@ke4zv.uucp>, <CAw5Jn.Etn@srgenprp.sr.hp.com>, <1993Jul29.123616.11120@ke4zv.uucp>unic

Subject : Re: TS50 Illegal!

Gary Coffman wrote:

>Common knowledge isn't always common, or correct. Especially with

>something as old hat as AM, sometimes the oldest books are the

>best. :-)

>I dug a little deeper and can give a good mathematical explanation
>of the reason the peak amplitude isn't 4X now.

>Let's assume we are modulating a carrier represented as

> $A_0 \cos(wt)$

>When we modulate with a sinewave, we get two sidebands in quadrature

> $.5MaA_0 \cos((w-p)t)$ and $.5MaA_0 \cos((w+p)t)$

>where Ma is the modulation degree $0 < Ma < 1$ with a $Ma=1$ equaling 100%
>modulation, and where 'p' is the instantaneous phase vector of the
>modulating waveform.

>And because the sidebands are in quadrature,

> $\cos((w+p)t) \cos((w-p)t) = \sqrt{2} \cos(wt)$.

>So the combined vector amplitude of the sidebands can be expressed as

> $\sqrt{2} \cdot .5MaA_0 \cos(wt)$ or $0.707MaA_0 \cos(wt)$

>Now we add in the carrier at an instant and $Ma=1$

> $A_0 \cos(wt) + 0.707A_0 \cos(wt) = 1.707A_0 \cos(wt)$

>So we can see that the instantaneous voltage is less than twice the unmodulated
voltage. Since the voltage is less than twice,
>the PEP is less than 4X. It's about 2.9X.

>There's a cute little vector diagram on pg 527 of the Fourth Edition
>of Reference Data for Radio Engineers that shows all this. I knew
>staring at vector plots would pay off some day. :-)

>Gary

>--

>Gary Coffman KE4ZV		You make it,	gatech!wa4mei!ke4zv!gary
>Destructive Testing Systems		we break it.	uunet!rsiatl!ke4zv!gary
>534 Shannon Way		Guaranteed!	emory!kd4nc!ke4zv!gary
>Lawrenceville, GA 30244			

The math here seems all right, but the assumption that the two sidebands of an AM signal are in quadrature does not hold. The phase relationship between the sidebands is changing at a rate of 2π (i.e. the frequency difference between

them). Thus, once every period of the modulating signal, the sidebands do add _in phase_ with each other, and also with the carrier at the same time, yielding a signal having an amplitude twice that of the unmodulated carrier. If the modulating frequency p is much lower than the carrier frequency, this condition will extend over several periods of the carrier, and the power will be four times that of the unmodulated carrier during this condition.

73, de LA9Z0

Kare

Date: Sun, 1 Aug 1993 21:23:33 GMT
From: swrinde!cs.utexas.edu!wupost!spool.mu.edu!sgiblab!sgigate!odin!
chuck.dallas.sgi.com!adams@network.ucsd.edu
To: info-hams@ucsd.edu

References <29JUL93.18194086@pfc.mit.edu>, <1993Jul30.235646.12618@unlv.edu>,
<schumach.744145294@convex.convex.com>ams
Subject : Re: Perseids meteor shower info wanted.

In article <schumach.744145294@convex.convex.com>, schumach@convex.com (Richard A. Schumacher) writes:

|>
|> >: Can anyone tell me when the peak of the Perseids meteor shower is supposed
to
|> >: peak and in which direction is the best to look for them? Thanks.
|>
|> If you're constrained to stay in the city and look up only occasionally,
|> you will probably see very little. So:
|>
|> Get as far from the city and from any lights as you can on the night of 11-12
|> August. The more sky visible, the better. You will need to lie on a reclining
|> lawn chair (or on the ground, if you have to; no one can look straight up for
|> any meaningful length of time). It will probably be best to face east (? just
|> a guess, really).
|> Take bug spray, a thermos of coffee (not decaf!), blankets (one can get
|> surprisingly chilled when lying motionless on even a warm night), and friends
|> or a radio to help stay awake. Be sure to get written permission in advance
from the
|> owners (if you'll be on private property), or from the authorities (if you'll
|> be in a public park after closing time). It would be a shame to miss a possible
|> meteor storm because one was in a county jail... Binoculars and
|> telescopes are useless for meteors, but of course they could be used
|> for stargazing instead if you get tired of meteors, so you might want to take
|> one.
|>

the favored position is probably more northeast, but if you think about this and you should, it probably doesn't matter. it's a matter of 3D geometry.

i think, all those who are concerned, might request in their county, that for the one night, all the billboards be turned off. call the owners, and call the advertisers and request if it would be possible for them this one night of the year to reduce the light pollution on this planet. not all the meteors will be that bright. give the kids of this planet an opportunity to witness this event first hand. it'll be their only chance.

i happen to live in denton county texas. it has more billboards per capita than any other place in the world. one of the nicest things that i enjoyed when visiting the company headquarters for alliant computer systems in acton MA aperiodically for three years was the fact that the boston area has a law and/or ordinance against billboards in the burbs. nice going MA. anybody in 2 land wanna make a comment on this. am i right?

i'm envious of those on the net that will be in CO UT and the less populated states away from light pollution. enjoy this night like i'm sure you enjoy all the others. i just may have to go to red river NM for one day just for this event. ;-)

enjoy,

p.s. i'm still predicting rain and/or cloudy skies in texas even though we've just set a record for no rain in july for the first time in about 100 years. we're all having problems.....

we're rationing water down in my part of the burbs.

--

-----cut here-----

Chuck Adams, K5FO - CP60

adams@sgi.com

End of Info-Hams Digest V93 #931
